

REMARKS

Claims 1-39 are pending. By this amendment, claims 3-6, 8, 10, 15 and 19-21 have been amended. Dependent claims 23-39 have been added. Reconsideration in view of the above amendments and following remarks is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

In paragraph 1 of the Office Action, it is stated that the drawings are objected to under 37 C.F.R. §1.83(a) for failing to show the "receptacle" recited in claims 13-22 and the "dispenser head" recited in claims 11 and 12.

The drawings have been corrected to show both the "receptacle" and the "dispenser head". Support for these features may be found in the specification on page 4, lines 28-31 where it is stated that the nozzle 10 can be snap fastened in the housing of a dispenser head. And also on page 6, lines 22-23, where it is stated the dispenser head is mounted on a receptacle. Withdrawal of the objection is respectfully requested.

In paragraph 3 of the Office Action it is stated that claims 3-6, 8, 10, 15 and 19-21 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In particular, it is specifically stated that these claims contain a broad range limitation together with a narrow range limitation that falls within the broad range limitation in the same claim. By this Amendment, claims 3-6, 8, 10, 15 and 19-21 have been amended to more particularly recite the range. As such, these claims are now definite. Withdrawal of the rejection is respectfully requested.

In paragraph 6 of the Office Action it is stated that claims 1, 3, 5, 7 and 10-12 are rejected under 35 U.S.C. §102(b) as being anticipated by Lund. This rejection is respectfully traversed.

In the Office Action it is stated that the values disclosed in Lund's device can be used to meet the ratio of limitations as recited in the claims. Specifically it is stated that using the values disclosed in Lund, the ratio of:

$$\frac{A_p}{A_o} = 0.415$$

may be arrived at which is:

$$\leq 0.5,$$

which is the disclosed limitation of the present invention. Applicant respectfully submits that the Lund preferred embodiment as stated in col. 3, lines 1-9 for the cumulative vane exit area is in a range of between about 0.18 and about 0.36mm² and thus the value for:

$$A_p = 0.04\text{mm}^2$$

as used by the Examiner, is far away from the preferred range indicated by Lund.

The Examiner has also used a value for a discharge orifice diameter = 0.5 mm. While this value is mentioned in the passage on col. 2, line 21 of the specification, relative to the prior art, this value is far away from the preferred value as disclosed in Lund of 0.35 mm. See col. 3, line 8. As such, the preferred values, as disclosed by Lund for discharge orifice diameter and A_p are far away from the values indicated in the Office Action for use with the equations of the subject invention.

Moreover, Lund fails to disclose the values that have been relied upon in the Office Action to reject the above claims. With regard to the value A_p , it is indicated in the Office Action that the Lund reference discloses a value of .04 mm², based on the value of .02 mm² as disclosed in Fig. 5, multiplied by the minimum number of vanes (2) as disclosed in Lund.

While the graph of Fig. 5 illustrates $.02 \text{ mm}^2$ as the endpoint of the Y axis, it fails to disclose any data for this value, or even that such a value could be used. As such, the Lund reference fails to disclose an individual cross-sectional vane exit area of $.02 \text{ mm}^2$ as alleged. Further, it appears that the Lund reference has provided this graph merely to illustrate a preferred range of micron size particles based on swirl chamber diameter and individual cross-sectional vane exit areas. This, coupled with the fact that the Lund reference discloses a preferred number of at least 3 vanes would indicate to a person of ordinary skill in the art that the smaller the individual cross-sectional vane exit area, the greater the number of vanes that would be necessary to practice the invention.

For instance, in the case of individual cross-sectional vane exit areas, in the range of $.03$ to $.04 \text{ mm}^2$, a minimum of six vanes would be necessary to reach the preferred cumulative vane exit area as disclosed in Lund. As such, there is no express teaching to use the lowest possible individual vane exit area and the least amount of vanes as stated in the Office Action in making the rejection. In fact, Lund would teach against such. Accordingly, when Lund is read as a whole, a person of ordinary skill in the art would not have been led to practice the present invention based on the teachings of Lund. The only teaching of such is Applicant's invention, the use of which by the Examiner constitutes impermissible hindsight consideration.

Without Applicant's recognition of the problem and solution exemplified by the claimed equation, one would not have been led to use the claimed size relationship. It is submitted that these values have been arbitrarily chosen from Fig. 5 by the Examiner, contrary to the teachings gleaned from Lund.

Applicant further submits that even if the curves illustrated in the graph of Fig. 5 extended to the endpoint of the Y axis ($.02 \text{ mm}^2$), the graph of Fig. 5 fails to illustrate any data for this point. As the purpose of the graph is to illustrate a preferred range of micron-

size particles based on swirl chamber diameter and individual cross-sectional vane exit areas, the curves illustrating the graph have been based on individual data points plotted on the graph in similar fashion to the data as shown in Fig. 6. Applicant submits that the graph of Fig. 5 cannot be regarded as disclosing any particular value for a cross-sectional exit area, because without individual data points plotted on the graph as shown in Fig. 6, it could be erroneously argued that the graph in fact discloses an infinite number of data points. In view of the above, withdrawal of the rejection of claims 3, 5, 7 and 10-12 under 35 U.S.C. §102(b) is respectfully requested.

In paragraph 8 of the Office Action it is stated that claims 2, 4, 6, 8 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund. The Applicant respectfully submits that these claims are allowable for their dependency on an allowable base claim and the further features recited therein. Withdrawal of the rejection is respectfully requested.

In paragraph 9 of the Office Action it is stated that claims 13-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lund in view of Heed et al. Heed fails to overcome the deficiencies of Lund. The Applicant respectfully submits that claims 13-22 are allowable for their dependency on an allowable base claim and further features recited therein. Withdrawal of the rejection is respectfully requested.

In paragraph 10 of the Office Action, it is stated that claims 1-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Burke et al. As stated in the Office Action Burke fails to disclose the ranges of the swirl chamber diameter, exit area of the channels, or orifice diameter. The Examiner has failed to make a prima facie case of obviousness and instead has made an unsubstantiated assertion that the various missing features would have been obvious. Because Burke fails to appreciate the problems overcome by the invention, one of ordinary skill in the art would not have been led to use the recited specific values. As such, Burke

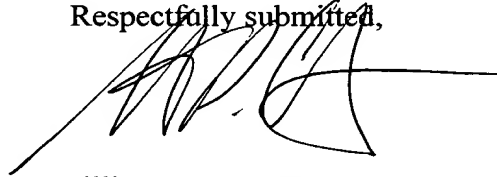
cannot be used to sustain a rejection under 35 U.S.C §103(a). Withdrawal of the rejection is respectfully requested.

In view of the foregoing, reconsideration of the application is requested. It is submitted that the claims as presented herein patentably distinguish over the applied references and fully meet the requirements of 35 U.S.C. §112. Accordingly, allowance of claims 1-22 is respectfully solicited.

New dependent claims 23-39 have been added by this amendment. Applicant submits that these claims are allowable for their dependency on allowable base claims and further features recited therein.

Should the Examiner believe that any further action by Applicant would place the application in even better condition for allowance, the Examiner is invited to contact Applicant's representative at the telephone number listed below.

Respectfully submitted,



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Date: November 29, 2001

Attachments:

Appendix

Request for Approval of Drawing Corrections

Petition for Extension of Time

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Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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APPENDIX

The following are marked-up versions of the amended claims:

3. (Amended) A nozzle according to claim 1, having a plurality of channels-
~~preferably two to six channels, and more preferably still four channels.~~

4. (Amended) A nozzle according to claim 1, wherein the ratio A_p/A_o is less than
or equal to 0.4 ~~advantageously less than or equal to 0.3, preferably lies in the range 0.15 to~~
~~0.35, and more preferably lies in the range 0.2 to 0.3.~~

5. (Amended) A nozzle according to claim 1, wherein the ratio $A_p/(D_s \bullet d_o)$ is
less than or equal to 0.15 ~~preferably lies in the range 0.1 to 0.15, and more preferably lies in~~
~~the range 0.11 to 0.14.~~

6. (Amended) A nozzle according to claim 1, wherein the ratio L_s/D_s is less than
or equal to 0.2 ~~is preferably less than or equal to 0.15, and more preferably lies in the range~~
~~0.1 to 0.15.~~

8. (Amended) A nozzle according to claim 1, wherein d_o lies in the range 0.4
mm to 1.2 mm ~~and preferably in the range 0.6 mm to 0.8 mm;~~

where:

d_o is the diameter of the outlet orifice.

10. (Amended) A nozzle according to claim 1, wherein D_s lies in the range 0.6
mm to 1.4 mm ~~preferably in the range 0.8 mm to 1.2 mm, and is more preferably close to 1-~~
~~mm;~~

where:

D_s is the diameter of the swirling chamber.

15. (Amended) A receptacle according to claim 13, containing a propellant gas
constituted by a non-liquefied compressed gas ~~preferably compressed air.~~

19. (Amended) A receptacle according to claim 14, wherein the mean droplet size of the spray, when the receptacle is full and at 20° C, lies in the range 30 μm to 100 μm -
~~preferably lies in the range 40 μm to 80 μm , and more preferably still is close to 60 μm .~~

20. (Amended) A receptacle according to claim 14, wherein the flow rate, when the receptacle is full and at 20° C, lies in the range 0.3 g/s to 1.5 g/s ~~and preferably lies in the range 0.4 g/s to 1 g/s.~~

21. (Amended) A receptacle according to claim 14, wherein the puff force, measured at 20° C and when the receptacle is full is less than or equal to 0.05 N ~~and is preferably close to 0.025 N.~~

Claims 23-39 are added.